UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,838	03/12/2004	Ignor B. Gornushkin	T2315-908017US01	5022

181 7590 05/05/2006

MILES & STOCKBRIDGE PC
1751 PINNACLE DRIVE
SUITE 500
MCLEAN, VA 22102-3833

EXAMINER	
GEISEL, KARA E	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/798,838	GORNUSHKIN ET AL.	
	Examiner	Art Unit	
	Kara E. Geisel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 3rd, 2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 5-8, 10-11, 15-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Pubs 2003/0223059), in view of Carlson et al. (USPN 6,569,685), both previously cited.

In regards to claims 1, 11, and 21, Li discloses a method and system (fig. 3a) for identifying an unknown material (in this case the unknown material is the DNA, protein, or sample a fluorochrome is

attached to, and by identifying the fluorochrome, the DNA, protein, or sample can be identified; page 1, ¶ 3 and page 8, ¶s 86-87) comprising obtaining a multi-order spectrum from a sample of the unknown material wherein the multi-order spectrum comprises a plurality of simultaneously obtained diffraction orders (page 7, ¶ 78; the detector receives 0-2nd order bands on different pixels simultaneously) via a spectrometer (fig. 3a, 30-32, 35, and 38), and outputting (via the display, fig. 3a, 38) an identification of the sample (fig. 10, page 1, ¶ 4 and page 8, ¶ 86) via an output device (fig. 3a, 34, 36). It is not disclosed to compare the multi-order spectrum to multi-order spectra for known materials, and identifying the sample based on a correlation between the spectrum from the sample and the spectrum from the known material. However, it is disclosed that the system would need to be able to distinguish and identify multiple fluorophores (page 8, ¶ 87), and furthermore, it is well known in the art to do this by comparing the spectrum of a measured sample to a known spectrum (for example, in a library of known spectrums, each spectrum being correlated to a known material), finding the most likely match between a known spectrum and the measured spectrum, and identifying the sample based on a correlation between the spectrum from the sample and the spectrum from the known material.

For example, Carlson discloses a method and system for identifying an unknown material (in this case the unknown material is protein or a sample a fluorochrome is attached to, and by identifying the fluorochrome, the protein, or sample can be identified; column 1, lines 5-20, column 3, lines 45-54, and column 4, lines 52-57) comprising obtaining a spectrum from a sample of unknown material (column 9, lines 43-47), and outputting the identification of the sample. This identification is done by comparing the spectrum to spectra for known materials (column 11, lines 18-21), and outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known materials (columns 4-5, lines 58-67 and 1-12 respectively, and column 11, lines 5-27), via an output device (column 5, lines 4-5). This method of comparing, and identifying based on the comparison, is done to provide a fast and efficient way of identifying unknown materials (column 3, lines 25-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in Li's method for identifying an unknown material, Carlson's comparison, and identifying based on the comparison, as the method to identify Li's unknown material in a fast and efficient way.

In regards to claims 5 and 15, the combined method and system further comprises building a library of spectra for the known materials (Carlson column 11, lines 5-13) via the output device.

In regards to claims 6 and 16, the comparison can be performed against a spectral library (Carlson column 11, lines 14-26).

In regards to claims 7 and 17, the multi-order sample spectrum comprises at least a first and a second order spectra (Li page 7, ¶ 78).

In regards to claims 8 and 18, the multi-order sample spectrum can comprise all spectra (Li page 2, ¶ 15).

In regards to claims 10 and 20, the combined method and system further comprises displaying a summary of the correlation via the output device (Li fig. 3a, 36)

Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Pubs 2003/0223059), in view of Carlson et al. (USPN 6,569,685), as applied to claims 1, 5-8, 10-11, 15-18, and 20-21 above, and further in view of Day et al. (USPN 5,508,525), all previously cited.

In regards to claims 2 and 12, the combined device does not disclose outputting one or more next closest identifications based upon the correlation between the multi-order spectrum from the sample and the multi-order spectra for known compositions.

Day discloses a similar method for identifying an unknown material to Carlson's, wherein Day discloses a material identification method comprising obtaining a spectrum from a sample (column 1, lines 50-53), comparing the spectrum to spectra for known compositions (column 1, lines 53-59), and outputting an identification of the sample based on a correlation between the spectrum from the sample

and the spectra for the known compositions (columns 5-6, lines 53-67 and 1-3, respectively). Furthermore, Day discloses that if there are multiple spectra that are close to the measured spectra, one or more of the next closest identifications are outputted in order to allow the user to decide which identification is more probable (column 2, lines 30-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Wilson's output include one or more of the next closest identifications, if there were more than one reference spectra that was closely correlated to the measured spectrum, in order to allow the user to decide which identification is more probable.

Claims 3-4, 9, 13-14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Pubs 2003/0223059), in view of Carlson et al. (USPN 6,569,685), as applied to claims 1, 5-8, 10-11, 15-18, and 20-21 above, and further in view of Gornushkin et al. ("Identification of Solid Materials by Correlation Analysis Using a Microscopic Laser Induced Plasma Spectrometer"), all previously cited.

In regards to claims 3-4, 9, 13-14, and 19, the combined method does not disclose what type of correlation is used.

Gornushkin discloses a similar method for identifying an unknown material to Carlson's, wherein Gornushkin discloses a material identification method comprising obtaining a spectrum from a sample (page 5159, column 1, lines 10-19), comparing the spectrum to spectra for known compositions (page 5159, column 2, lines 7-17), and outputting an identification of the sample based on a correlation between the spectrum from the sample and the spectra for the known compositions (page 5159, column 2, lines 7-17). Furthermore, Gornushkin discloses that the correlation could be a linear, a rank correlation, or a statistical correlation. The reason for using linear, rank, or statistical correlation is that when the measured spectra looks nearly identical to many spectra in the library, powerful methods are required to differentiate the spectra and therefore identify the unknown material (page 5160, column 1), and these correlations are powerful enough to offer reliable identification of an unknown material (page 5164, conclusion). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to have Wilson's correlation include a linear and a rank correlation, in order to provide powerful methods to allow reliable identification of an unknown material. Furthermore, these correlations include determining a correlation coefficient, which could be outputted by the output device (page 5159, column 2, lines 7-17).

Response to Arguments

Applicant's arguments filed March 3rd, 2006, with respect to claims 1-21, have been fully considered but they are not persuasive. Li discloses using multi-order spectra measured to identify unknown material (page 1, ¶ 3, page 7, ¶ 78, and page 8, ¶s 86-87). Li is silent to how the identification takes place; therefore one skilled in the art would be motivated to find the most efficient way to identify these unknown materials. Carlson is used merely as a showing that it is well known to use a library of spectra, to compare the measured spectra to the library to identify an unknown material in a fast and efficient way. It is not required for Carlson to obtain a multi-order spectrum from a material, since this is not the teaching Carlson is used for. Furthermore, since one skilled in the art is looking for ways to identify an unknown material using Li's multi-order spectra, it would be obvious to one of ordinary skill in the art to compare the spectra to a library of similar spectra (in this case, compare the measured multi-order spectra to a library of multi-order spectra) in order to accurately identify the material.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E. Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory J. Toatley, Jr.
SPE
Art Unit 2877

K.G.

KEG
April 24, 2006